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L2: Entry 1 of 2 File: JPAB Feb 18, 1994

PUB-NO: JP406044608A
DOCUMENT-IDENTIFIER: JP 06044608 A
TITLE: OPTICAL INFORMATION RECORDING MEDIUM

PUBN-DATE: February 18, 1994

INVENTOR-INFORMATION:

NAME	COUNTRY
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APPL-NO: JP04072694
APPL-DATE: February 21, 1992

US-CL-CURRENT: 369/283
INT-CL (IPC): G11B 7/24; B41M 5/26

ABSTRACT:

PURPOSE: To provide an optical information recording medium not causing the deterioration of recording pits even in an environment at high temp. and humidity and capable of accurately recording and reproducing information over a long period of time.

CONSTITUTION: One or both of dielectric films 31, 32 having <50nm thickness are interposed between an org. protective film 2 and a reflecting film 4 and/or between the reflecting film 4 and an org. protective film 5 so as to enhance the adhesion of the films. Since the dielectric films 31, 32 are hard, the shrinkage of the reflecting film 4 and the org. protective film 5 is inhibited.

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End of Result Set

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L2: Entry 2 of 2 File: DWPI Feb 18, 1994

DERWENT-ACC-NO: 1994-095408
DERWENT-WEEK: 199412

TITLE: Optical information recording medium - has dielectric layer of silica, aluminium nitride, zinc sulphide, etc. formed between recording and reflecting films and/or reflecting and protecting films

PATENT-ASSIGNEE:

ASSIGNEE	CODE
DENON CO LTD	NPCO

PRIORITY-DATA: 1992JP-0072694 (February 21, 1992)

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PATENT-FAMILY:

	PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
☐	JP 06044608 A	February 18, 1994		003	G11B007/24

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
JP 06044608A	February 21, 1992	1992JP-0072694	

INT-CL (IPC): B41M 5/26; G11B 7/24

ABSTRACTED-PUB-NO: JP 06044608A
BASIC-ABSTRACT:

Medium comprises lamination of a substrate, an organic colouring material recording film, a reflecting film and an UV ray curing type resin film. A dielectric layer made of SiO, SiO2, ZnS, etc. is formed between the recording film and the reflecting film and/or between the reflecting film and the protection film.

ADVANTAGE - The medium allows accurate information write and read for long time.

In an example, an optical disk was prepd. by lamination of a polycarbonate substrate disk, a colouring material (e.g. cyanine dye) recording film, a dielectric film (e.g. up to 50 nm thick SiO2), a reflecting film (e.g. up to 50 nm thick Au), and an UV ray curing type resin protection film. A test of the disk written by 1.1-1.4 m/s of EMF signal and held for 100 hrs. (corresp. to at least 10 years) at 70 deg.C/85% R.H. showed no change on block error and modulation.

CHOSEN-DRAWING: Dwg.1/4

TITLE-TERMS: OPTICAL INFORMATION RECORD MEDIUM DIELECTRIC LAYER SILICA ALUMINIUM NITRIDE ZINC SULPHIDE FORMING RECORD REFLECT FILM REFLECT PROTECT FILM

DERWENT-CLASS: A89 G06 L03 P75 T03 W04

CPI-CODES: A11-C02B; A12-L03C; G06-A08; G06-A11; G06-A13; G06-C06; G06-D07; L03-G04B;

EPI-CODES: T03-B01; T03-B01D1; W04-C01;

POLYMER-MULTIPUNCH-CODES-AND-KEY-SERIALS:
Key Serials: 0231 1288 1292 2016 2020 2194 2198 2440 2493 2499 2729 2841 2851 3267 3317

Multipunch Codes: 017 04- 143 155 157 158 472 634 649 017 04- 231 353 359 431 445 473 477 57& 634 649

SECONDARY-ACC-NO:
CPI Secondary Accession Numbers: C1994-043730
Non-CPI Secondary Accession Numbers: N1994-074728

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審査請求　有　　請求項の数１(全　３　頁)

(21)出願番号　特願平4－72694

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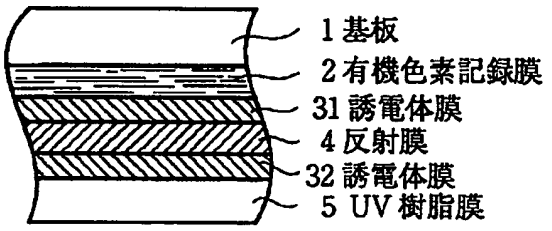
(54)【発明の名称】　光情報記録媒体

(57)【要約】

【目的】　高温高湿環境下でも、記録ピットの劣化はなく長期間にわたって正確に情報を記録再生する事が出来る光情報記録媒体を得る。

【構成】　有機系色素記録膜と反射膜の間と、反射膜と有機系保護膜の間のどちらか一方あるいは両方に誘電体膜（＜５０ｎｍ）を作成積層し、各膜間の密着性の向上を図ると共に、誘電体膜が硬質なため反射膜有機系保護膜の収縮を抑える。



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【特許請求の範囲】

【請求項1】　基体と該基体上に有機系色素記録膜、反射膜及びUV樹脂膜の順で形成し上記記録薄膜へ光ビームを照射し、情報を記録する光情報記録媒体において、上記有機色素記録膜と上記反射膜間、上記反射膜と上記有機系保護膜間のどちらか一方あるいは両方にSiO，SiO_2，AlN，ZnSなどの誘電体層を有することを特徴とする光情報記録媒体。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、光ビームを用いて情報が記録再生される光情報記録媒体のディスクに関するものである。

【0002】

【従来の技術】近年、記録再生可能な光記録媒体として、量産性に優れ多種多様な材料を揃える有機色素が注目されている。このような有機色素を記録膜として用いた光情報記録媒体は、通常フロッピーディスクに代わるコンピュータ周辺の外部記録装置メモリーとして使用されていたが、ここ数年、記録可能なコンパクト・ディスク（以後、CD）としての用途が脚光を浴びている。

【0003】ディスク構造も従来からのエアーサンドウィッチ構造ではなく、CD同様単板構造である。又、CD同様、記録可能なCDも記録データの長期保存（一般的には10年以上）の目的に使用されることがあり、高温高湿の環境下に放置されても記録材料の変化がなく記録データを正確に読み書きできることが必要である。

【0004】

【発明が解決しようとする課題】例えば有機色素系記録材料では、かかる点についてみると高温高湿の環境下において、色素自体は耐酸化性に優れ腐食は起こらないが、従来からのディスク構造（図4）では膜の剥離、収縮が発生し、ピット部の光学的性質が変化しピットが劣化する欠点があった。そのため、記録信号の変調度の低下、及びブロックエラーの増加が生じた。本発明はこの様な高温高湿下での膜の剥離、収縮を防止し、長期間にわたり安定して情報を記録再生できる光情報記録媒体を提供することを目的としている。

【0005】

【課題を解決するための手段】本発明は上記問題点を解決するために、基体と該基体上に有機系色素記録膜、反射膜及びUV樹脂膜の順で形成した光情報記録媒体において、上記有機色素記録膜と上記反射膜の間か、上記反射膜と上記有機系保護膜の間どちらか一方、あるいは両方にSiO，SiO_2，AlN，SiN，SiAlON，MgO，ZnSなどの誘電体膜を成膜し積層した構造とする事を特徴とする。

【0006】

【作用】本手段による作用を以下に説明する。先ず有機色素記録膜と反射膜の間に誘電体膜を設けた構造では、

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有機色素膜と誘電体膜、誘電体膜と反射膜の間の密着性が向上し、高温高湿環境下でも膜の剥離は防止され記録ピットの劣化は起こらない。更に、誘電体膜自体が硬質な膜であるため、高温高湿環境下でも収縮は起こり難く、プラスチック基体、反射膜、有機系保護膜の収縮を抑制する役割を持つ。

【0007】このため膜の剥離が防止され記録ピットは安定である。同様に、反射膜と有機系保護膜の間に誘電体膜を成膜する構造、あるいは有機色素記録膜と反射膜の間と反射膜と有機系保護膜の間両方に誘電体膜を成膜する構造でも同等の作用が得られる。

【0008】

【実施例】図1は本発明による光情報記録媒体の一実施例を示したものである。即ち、ポリカーボネイト基板1の上に有機色素記録膜2、更に誘電体膜31，金反射膜4，誘電体膜32，紫外線硬化樹脂（以下UV樹脂）膜5を積層した。図1では誘電体膜31，32両方設けた場合であるが、どちらか一方を設けた構造でも可能であり、合計3種のディスク構造が考えられる。

【0009】ここで、基板1はポリカーボネイトに限ることなく従来から公知の如く、PMMA，ポリオレフィン，エポキシ等の透明なプラスチック材を使用できる。有機色素記録膜2としては、記録用レーザ光を吸収（600～900nmの波長帯域）して分解もしくは昇華する有機色素、例えばシアニン色素、ナフトキノン系色素、フタロシアニン系色素、スクアリリウム系色素等である。

【0010】成膜方法としては、真空蒸着法、スピンコート法が用いられ、スピンコート法で塗布する場合、これら有機系色素化合物をアルコール、ケトンアルコール、ケトン系溶剤中に溶解された溶液を用いる。誘電体膜31，32及び金反射膜4は、真空蒸着法及びスパッタリング法により成膜する。膜厚は50nm以下が望ましい。

【0011】ここで、誘電体膜31，32としてはSiOn（n＝1～2），MgOなどの酸化物、AlN，SiNなどの窒化物、ZnSなどの硫化物、SiAlONなどである。反射膜4としては、Auだけでなく Ag，Cu，Al，Ni，Ni－Cr及びこれら混合物でも良い。有機系保護膜5は一般的にはスピンコート法で成膜するUV樹脂膜であるが、これ以外でもエポキシ系の熱硬化樹脂でも良い。

【0012】本実施例によるディスク状光情報記録媒体にレーザビームを照射し、線速1.2～1.4m／sでEFM信号を記録し、その後70℃，85%RHの温湿度加速試験を行ったときのブロックエラーの変化を図2、変調度（I11／Itop）の変化を図3に示す。

【0013】図2，図3からも明白なように、本実施例による有機色素記録膜2と反射膜4の間、反射膜4と有機系保護膜5の間どちらか一方あるいは両方に誘電体膜

３１，３２を成膜し積層するディスク構造での光情報記録媒体は、従来の誘電体膜を使用しないディスクに比べて温湿度試験後も、ブロックエラー、変調度が初期と変わらない。試験温度が５０，６０℃の結果も踏まえて、アレニウスの式により通常状態（２５℃）で１０年以上の媒体寿命があることがわかる。

【００１４】

【発明の効果】このように本発明による光情報記録媒体は、有機色素記録膜と反射膜の間、反射膜と有機系保護膜の間どちらか一方あるいは両方に誘電体膜を成膜し積層するディスク構造としたので、高温高湿環境下に放置されても有機系色素膜と反射膜の間、あるいは反射膜と有機系保護膜の間の密着力が誘電体膜を介して強くなり、又、反射膜、有機系保護膜の収縮が誘電体膜に吸収されるため、記録ピットの劣化がない。したがって、長

期間にわたって正確に情報を記録再生することができる。

【図面の簡単な説明】

【図１】本発明による光情報記録媒体の断面図。

【図２】本発明によるディスク構造の光情報記録媒体のブロックエラーの変化を示す線図。

【図３】同じく変調度の変化を示す線図。

【図４】従来の光情報記録媒体の断面図。

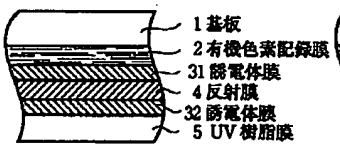
【符号の説明】

１　基板　　２　有機系色素記録膜

４　金反射膜　　５　ＵＶ樹脂膜

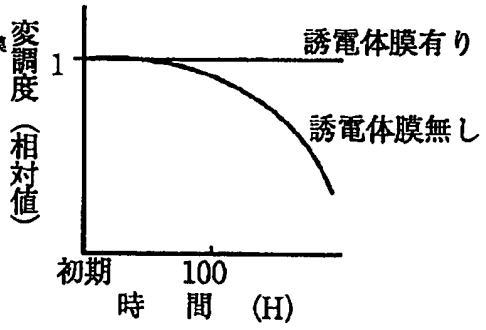
３１，３２　誘電体膜

【図１】

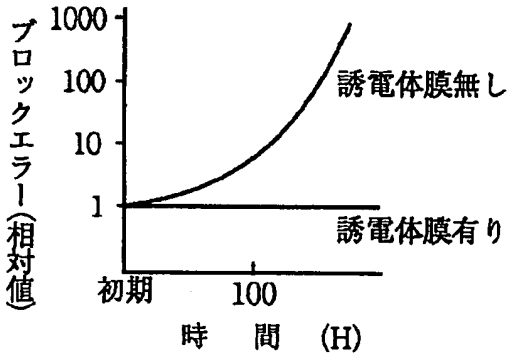


【図４】

【図３】



【図２】



* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the disk of the optical information record medium with which record playback of the information is carried out using a light beam.
[0002]
[Description of the Prior Art] In recent years, the organic coloring matter which is excellent in mass-production nature and prepares a variety of ingredients as an optical recording medium in which an account rec/play student is possible attracts attention. Although the optical information record medium using such organic coloring matter as record film was used as outboard recorder memory of the computer circumference usually replaced with a floppy disk, the application as a recordable compact disc (henceforth, CD) is in the limelight in the past several years.
[0003] It is veneer structure not like the Ayr sandwiches structure from the former but like [disk structure] CD. Moreover, even if recordable CD may also be used for the purpose of the mothball (generally ten years or more) of record data and it is left under the environment of high-humidity/temperature like CD, it is required for there to be no change of a record ingredient and to be able to write record data correctly.
[0004]
[Problem(s) to be Solved by the Invention] for example , although coloring matter itself be excellent in an oxidation resistance and corrosion did not take place to the bottom of the environment of high-humidity/temperature with an organic coloring matter system record ingredient when saw about this point , with the disk structure (drawing 4) from the former , exfoliation of the film and contraction occurred and there be a fault in which the optical property of the pit section change and a pit deteriorate . Therefore, the fall of the modulation factor of a record signal and the increment in a block error arose. It aims at offering the optical information record medium which this invention prevents exfoliation of the film under such high-humidity/temperature, and contraction, is stabilized over a long period of time, and can carry out record playback of the information.
[0005]
[Means for Solving the Problem] In the optical information record medium formed on the base and this base in order of organic system coloring matter record film, the reflective film, and UV resin film in order that this invention might solve the above-mentioned trouble It is characterized by considering as the structure which formed and carried out the laminating of the dielectric films, such as SiO, SiO2, AlN, SiN, SiAlON, and MgO, ZnS, to either or both between the above-mentioned organic-coloring-matter record film and the above-mentioned reflective film and between the above-mentioned reflective film and the above-mentioned organic system protective coat.
[0006]
[Function] The operation by this means is explained below. With the structure which prepared the dielectric film between organic-coloring-matter record film and the reflective film first, the adhesion between the organic-coloring-matter film, a dielectric film and a dielectric film, and the reflective film

improves, exfoliation of the film is prevented also under a high-humidity/temperature environment, and degradation of a record pit does not take place. Furthermore, since the dielectric film itself is hard film, also under a high-humidity/temperature environment, contraction cannot take place easily and has the role which controls contraction of a plastics base, the reflective film, and an organic system protective coat.

[0007] For this reason, exfoliation of the film is prevented and the record pit is stable. Similarly, an equivalent operation is acquired also with the structure which forms a dielectric film between the reflective film and an organic system protective coat, or the structure which forms a dielectric film to both between the reflective film and an organic system protective coat between organic-coloring-matter record film and reflective film.

[0008]

[Example] Drawing 1 shows one example of the optical information record medium by this invention. That is, the laminating of organic-coloring-matter record film 2 and also a dielectric film 31, the golden reflective film 4, a dielectric film 32, and the ultraviolet-rays hardening resin (following UV resin) film 5 was carried out on the polycarbonate substrate 1. drawing 1 -- dielectric films 31 and 32 -- although it is the case where both are prepared, also with the structure which prepared either, it is possible and a total of three sorts of disk structures can be considered.

[0009] Here, without restricting to a polycarbonate, from the former, a substrate 1 can use transparent plastics material, such as PMMA, polyolefine, and epoxy, so that it may be well-known. They are the organic coloring matter which absorbs the laser beam for record (600-900nm wavelength band), and is disassembled or sublimated as organic-coloring-matter record film 2, for example, cyanine dye, naphthoquinone system coloring matter, phthalocyanine system coloring matter, squarylium system coloring matter, etc.

[0010] When a vacuum deposition method and a spin coat method are used and it applies with a spin coat method as the membrane formation approach, the solution dissolved into alcohol, the ketone alcohol, and ketones in these organic system coloring matter compound is used. Dielectric films 31 and 32 and the golden reflective film 4 form membranes by the vacuum deposition method and the sputtering method. 50nm or less of thickness is desirable.

[0011] Here, as dielectric films 31 and 32, they are sulfides, such as nitrides, such as oxides, such as SiOn (n=1-2) and MgO, and AlN, SiN, and ZnS, SiAlON, etc. As reflective film 4, not only Au but Ag, Cu, aluminum and nickel, nickel-Cr, and these mixture are sufficient. Although the organic system protective coat 5 is UV resin film which generally forms membranes with a spin coat method, the heat-curing resin except this of an epoxy system is sufficient.

[0012] A laser beam is irradiated at the disk-like light information record medium by this example, an EFM signal is recorded with the linear velocity of 1.2-1.4m/s, and change of drawing 2 and a modulation factor (I11/Itop) is shown for change of the block error when performing 70 degrees C and the temperature-and-humidity accelerated test of 85%RH after that in drawing 3 .

[0013] Compared with the disk with which the conventional dielectric film is not used for the optical information record medium in the disk structure which forms and carries out the laminating of the dielectric films 31 and 32 to either or both also from drawing 2 and drawing 3 between the organic-coloring-matter record film 2 by this example, between the reflective film 4 and the reflective film 4, and the organic system protective coat 5 so that clearly, after a temperature-and-humidity trial does not change a block error and a modulation factor to the first stage. It turns out that a test temperature is based also on the result of 50 or 60 degrees C, and there is ten years or more of medium life by the normal state (25 degrees C) by Arrhenius' equation.

[0014]

[Effect of the Invention] Thus, since the optical information record medium by this invention was made into the disk structure which forms and carries out the laminating of the dielectric film to either or both between organic-coloring-matter record film, between reflective film and the reflective film, and an organic system protective coat Since the adhesion force between the organic system coloring matter film and the reflective film or between the reflective film and an organic system protective coat becomes

strong through a dielectric film and contraction of the reflective film and an organic system protective coat is absorbed by the dielectric film even if left under a high-humidity/temperature environment, there is no degradation of a record pit. Therefore, record playback of the information can be correctly carried out over a long period of time.

[Translation done.]